Natural Language Processing (NLP)
Department of Computer Science and Engineering
Course Number 841, Section 1
Asynchronous Instruction
Fall Semester, 2020

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Course Materials:
All course materials are available online at: https://gitlab.msu.edu/cse842-fall-2020. If you can not access the repository, please contact the course instructor.

Course Description:
This course provides an overview of contemporary methods, techniques, and research topics within the field of Natural Language Processing. More specifically, this course covers four major domains of NLP:

1. Text representation: how to pre-process and represent text for use by classification models. Specific topics include *regular expressions, edit distance, bag of words, text classification, sentiment analysis, cross validation, TF-IDF, vector representations, and neuronal language models*.
2. Natural language understanding: how to extract structure from text, represent knowledge, and reason. Specific topics include *parts of speech tagging, context, Deep networks, Encoder-Decoder networks, attention, transformer networks, context free grammar, parsers, dependency relationships, first-order logic, event and state representations.*
3. Discourse and dialogue systems: how to build systems that interact with human agents. Specific topics include *Named entity recognitions, information extraction, semantic role labeling, sentiment, affect, coreference resolution and discourse coherence, question answering, dialogue systems, and chatbots.*
4. Speech: methods and systems to represent and analyze human speech signals. Specific topics include *phonetics, diarisation, speech-to-text, speech synthesis*

Course Goals:
Students who complete this course successfully will:
1. Develop a theoretical understanding of contemporary NLP methods.
2. Obtain practical experience with the analysis of natural language.
3. Obtain familiarity with research study design, implementation, and reporting.

Assignments:

All assignments will be submitted as iPython notebooks through the course GitLab repository[1]. Your notebooks must contain functioning code, with outputs, as well Markdown sections that clearly demarcate and explain what your code does, and an interpretation of the results.

Paired assignments: For each homework, you will be assigned a distinct partner in the class that you will work with. This pairing is designed to help you get to know your class-mates, and learn how to collaborate in an Asynchronous world. Projects will be performed independently.

Late assignment policy: Late assignments will not be accepted without prior written permission that is obtained at least 48 hours in advance of the deadline. Assignments that are incomplete by the deadline will receive no credit.

[70%] Homework Assignments: There are 15 assignments cumulatively worth 70% of your final grade; each assignment is worth 5% of your final grade. Homework is released every Monday, and due the following Sunday before midnight.

[20%] Course Project: The project consists of 4 parts, each released and due in monthly intervals. Each part of the project part is worth 5% of your total grade. The project is cumulatively worth 20% of your final grade.

[10%] Final Report: The final report is a write up that describes your course project results. It must be formatted like a formal scientific paper and should (ideally) be ready for submission to a scientific journal or conference by the end of the semester. The final report is worth 10% of your final grade.

Grading Policy and Scale:

Percentage (%)	Course Grade
89.50 – 100.0	4.0
84.50 – 89.49	3.5
79.50 – 84.49	3.0
74.50 – 79.49	2.5
69.50 – 74.49	2.0
64.50 – 69.49	1.5
59.50 – 64.49	1.0
00.00 – 59.49	0

In the unlikely event of an error in grading your assignment, you will have 24 hours to request a regrade. Requests made after this time will not be considered.

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[1] https://gitlab.msu.edu/cse842-fall-2020
   Please Note: the repository tracks submission times, and automatically check for plagiarism.

Academic dishonesty:

Any evidence of academic dishonesty will result in an automatic failing grade in the course. Please see the following URL for a definition of academic misconduct:

https://ombud.msu.edu/resources-self-help/academic-integrity

Special needs and exceptional circumstances:

Students who have registered special needs with RCPD (https://www.rcpd.msu.edu/services), or who have been impacted by exceptional circumstances more so than other members of the student community are entitled to receive reasonable accommodations to facilitate their educational experience.